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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/747,943	12/31/2003	Hye-Young Kim	3430-0196P	6952

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EXAMINER

QI, ZHI QIANG

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 01/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/747,943	KIM, HYE-YOUNG	
	Examiner	Art Unit	
	Mike Qi	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-30 is/are pending in the application.
- 4a) Of the above claim(s) 13-18 and 26-29 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5-10 and 21-24 is/are allowed.
- 6) ☒ Claim(s) 1,3,4,19,20 and 30 is/are rejected.
- 7) ☒ Claim(s) 11,12 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to because of the following informalities:

In claim 1, lines 5-6, recitation “. . . , the organic insulating layer being disposed below the first inorganic insulating layer; . . .” should be - - . . . the organic insulating layer being disposed below the second inorganic insulating layer; . . - - according to the Fig.9E and the corresponding specification. For examination purpose, it is interpreted as the organic insulating layer being disposed below the second inorganic insulating layer. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3-4, 19-20 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,011,608 (Tanaka) in view of US 6,683,668 B2 (Moon et al).

Regarding claims 1, 3-4, Tanaka discloses (col.6, lines 44-64; Fig.7) that a liquid crystal display device comprising;

- first and second (lower and counter) substrates facing and spaced from each other;

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- inorganic insulating layer (20) over an inner surface of the lower substrate (11) (first substrate);
- organic insulating layer (21);
- seal pattern (45) between the inorganic insulating layer (20) and an inner surface of the second substrates (counter substrate), and the seal pattern (45) contacting the inorganic insulating layer (20) (Fig.7).

Tanaka does not explicitly disclose that a second inorganic layer on the inner surface of the first substrate (lower substrate) so that the organic insulating layer between the first and second inorganic insulating layers; and the material of the first and second inorganic insulating layer is silicon nitride (SiN_x) or silicon oxide (SiO_2) or silicon oxynitride (SiO_xNy) and the material of the organic insulating layer is benzocyclobutene (BCB) or acrylic resin or methacrylic resin.

Moon discloses (col.4, line 18 – col.5, line 37; Fig.6) that a second inorganic insulating layer (84) on the inner surface of the first substrate (lower substrate), and the organic insulating layer (68) between the first and second inorganic insulating layers (62 and 84); and the material of the first and second insulating layers (62 and 84) are silicon nitride (SiN_x) or silicon oxide (SiO_x) (col.4, lines 67- col. line1; and col.5, lines 30-32); and the material of the organic insulating layer (68) is benzocyclobutene (BCB) so as to increase the adhesive strength.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the liquid crystal display device of Tanaka with the teachings of using second inorganic insulating film and organic film between the first

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and second inorganic layers and using silicon nitride or silicon oxide as the material of the inorganic layers and using BCB as the material of the organic layer as taught by Moon, since the skilled in the art would be motivated for increasing the adhesive strength (col.4, lines 19-38).

Regarding claims 19-20 and 30, Tanaka teaches the invention set forth above. Tanaka further discloses (col.4, lines 7 – 42; Fig.2) that fabricating a liquid crystal display device comprises forming a thin film transistor (TFT) on a first substrate (lower substrate 11), forming passivation layer (organic insulating film 21 functions as passivation layer) covering the thin film transistor (TFT), forming a seal pattern (45) surrounding the thin film transistor (surrounds the display area) and bounding the two substrates so that the seal pattern (45) contacts the inorganic insulating layer (20) and the second (counter) substrate.

Tanaka lacks that an inorganic insulating layer on the passivation layer (organic insulating layer), and the material of the inorganic insulating layer is silicon nitride (SiNx).

Moon discloses (col.4, line 18 – col.5, line 37; Fig.6) that an inorganic insulating layer (84) on the passivation layer (68) (organic insulating layer functions as passivation layer) and using silicon nitride (SiNx) as the material of the inorganic layer (col.5, lines 30-36) in order to increase the adhesive strength.

Moon discloses (Fig.6) that a gate electrode (56) formed on the first substrate (51), a gate insulating layer (62) (inorganic material) formed on the gate electrode (56),

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an active layer (64) formed on the gate insulating layer (62), and source (54) and drain (60) electrode formed on the active layer (64), and that is conventional.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the liquid crystal display device of Tanaka with the teachings of using an inorganic insulating film on the passivation layer and using silicon nitride as the material of the inorganic layer as taught by Moon, since the skilled in the art would be motivated for increasing the adhesive strength (col.4, lines 19-38).

Allowable Subject Matter

4. Claims 5-10 and 21-24 are allowed.
5. Claims 11-12 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
6. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record neither discloses nor teaches that a liquid crystal display device and the fabricating method comprising various elements and steps as claimed, more specifically, as the following:

the second inorganic insulating layer has at least one groove through the first inorganic insulating layer and the organic layer; and forming at least one groove through at least part of the gate insulating layer, the passivation layer and at least part of the

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inorganic insulating layer; and at least one groove through the passivation layer and at least part of the gate insulating layer [claims 5, 21 and 11, 25, as shown in Fig.9E].

The closest reference Tanaka teaches that using organic insulating layer on an inorganic insulating layer, and the seal pattern contacting the inorganic insulating layer. The reference Moon teaches using second inorganic insulating layer on an organic insulating layer, but it does not teach the second inorganic insulating layer having groove through the first inorganic insulating layer (gate insulating layer), organic insulating layer (passivation layer) and the second inorganic insulating layer as claimed and as shown in Fig.9E.

Election/Restrictions

1. Claims 13-18 and 26-29 withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected claims, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on July 28, 2005.

The claim 16 and 29 are independent claims.

Response to Arguments

2. Applicant's arguments filed on Dec.9, 2005 have been fully considered but they are not persuasive.

1) The reference Tanaka is relied on to teach (col.6, lines 44-64; Fig.7) a structure of liquid crystal display having sealant pattern and using insulating layers.

2) The reference Moon is elide on to teach (col.4, line 18 – col.5, line 37;Fig.6) the material of the inorganic insulating layers and the organic layers. Moon teaches (col.5, lines 30-37) that the inorganic insulating layer (84) is formed of silicon nitride (SiNx) and the silicon nitride (SiNx) may include an amount of hydrogen (H) to increase the adhesive strength. Such that means the silicon nitride (SiNx) may or may not include an amount of hydrogen.

Conclusion

3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299.

The examiner can normally be reached on M-T 8:00 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mike Qi
January 14, 2006


ANDREW SCHECHTER
PRIMARY EXAMINER